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SEASONAL PROGRESS REPORT NO. 2
for the period June, July and August 1976
to
ENVIRONMENTAL PROTECTION AGENCY
REGION VIII

aeromet inc.

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SEASONAL PROGRESS REPORT NO. 2

for the period June, July and August 1976

to

ENVIRONMENTAL PROTECTION AGENCY

REGION VIII

1860 Lincoln St., Suite 900

Denver, CO 80203

Contract No. 68-01-1946

by

Aeromet, Inc.

Box FF

Norman, OK 73070

1.0 INTRODUCTION

Low level temperature and wind data were collected for the summer season of June, July and August, 1976 at Casper, Wyoming; the Shell Oil Co. Colorado C-b Tract 25 miles west of Rio Blanco, Colorado; Craig, Colorado; Escalante and Hanksville, Utah; and Rock Springs, Wyoming. The data collection was made using a 30 gm helium filled pilot balloon with a temperature sonde attached, a single theodolite and a TSR-2 receiver/recorder twice a day every other day. The observations were made ½ hour after sunrise and 1400L.

The pilot balloon had an ascent rate of 500 ft/min and it was tracked by a single theodolite for 12 minutes with the azimuth and elevation angles recorded every 30 seconds on a cassette tape recorder. The tape was transcribed to a pilot balloon form after the observation.

The temperature sonde operated at 403 MHz and the signal was received by a ground plane antenna at least 24 ft. AGL which was attached to the Aeromet, Inc. TSR-2 receiver/recorder. The TSR-2 receiver has a built-in Rustrak strip chart recorder and the temperature was recorded within the range from -50°C to +50°C. A baseline temperature calibration was performed with each T-sonde by the adjustment of the recorded temperature to match the thermometer measured temperature next to the transmitting sonde. Once the calibration check was finished the balloon was released with the sonde attached and the temperature was recorded for at least 20 minutes. At the completion of each observation the data were mailed to Aeromet, Inc.

The Seasonal Progress Report is divided into six parts, one corresponding to each of the six field sites. The temperature and wind data were not edited after the completion of the Monthly Progress Reports.

2.0 DATA SUMMARY

2.1 Mixing Layer Height

The average mixing layer height was computed for the morning and afternoon based on the morning and 1400L temperature soundings. The balloon release ½ hour after sunrise is near enough to the minimum temperature to assume the correctness of the calculated mixing layer heights. The afternoon balloon release is generally not at the time of maximum heating and the user of the mixing layer height data must be aware that minor changes in the calculated values can be expected. Without equipping the field sites with minimum/maximum thermometers the extrapolation of the afternoon data cannot be justified in establishing a data base for statistical analysis. The approximation of the afternoon maximum temperature would be a "calculated guess" for there are: 1) local effects which are to be determined and would be filtered out with extrapolation, 2) mountain effects which alter the lower 1500m (e.g. downslope effects), and 3) meteorological effects which can alter the expected change in the sounding (e.g. advection, moisture, etc.).

It is felt that to better define the mixing layer height that a variety of "heat island" effects should be viewed. The rigorous method would be to define 15 "heat island" effects ranging from 0 to 14°C and let the user decide which would best serve his needs. However, for these analysis 0°, +5° and +10° "heat island" effects are calculated and listed for the morning and afternoon soundings in the table Average Mixing Layer Height.

A summary of the average mixing layer heights calculated with the 0°, +5° and +10° "heat island" effects for each of the six field sites for the summer season of June, July and August are included in the report. The percent of occurrence of the average height within 250m increments above ground level is given in tabular form. The total number of soundings included in the sample populations are listed in the table.

2.2 Stability and Inversion Classification

The temperature and wind data were edited to remove data felt to cause anomalous results in the stability and inversion classification schemes. Only the stations listed prior to the table classifying the inversions were used in the calculations.

The temperature data are processed to produce for each site a seasonal summary of inversion layers and lapse rates within the inversions and from the inversion base to the surface by means of the Holzworth classification scheme for inversions (Holzworth, G. C., 1974: "Climatological Data on Atmospheric Stability in the United States" paper presented at the American Meteorological Society Symposium on Atmospheric Diffusion and Air Pollution, September 9-13, 1974. Santa Barbara, California.)

The temperature and wind data are processed together to produce for each site a monthly average bivariate frequency distribution of wind direction versus wind speed represented in the 500m layer adjacent to the ground. The distribution is presented by the six Pasquill stability classes (A-F) and a summary independent of stability. If the $\Delta T/100m$ criterion is met but the wind speed criterion is not met, then the wind data are checked against the criterion

STABILITY CLASS	ΔT (°C/100m)	WIND SPEED ($m\ s^{-1}$)
A	<-1.9	≤ 2
B	-1.9 - -1.7	≤ 5
C	-1.7 - -1.5	≤ 6
D	-1.5 - -0.5	ALL SPEEDS
E	-0.5 - 1.5	≤ 5
F	> 1.5	≤ 3

for the next stability class, always cascading to the D stability class. Once the wind speed criterion is met the data are classified under the new stability class even though now the lapse rate exceeds the class criterion. For example, if the $\Delta T/100m$ value is 1.7 and the wind speed is 7 $m\ s^{-1}$, the lapse rate criterion is met for the stability class F, however the wind speed criterion is exceeded. The wind speed is greater than the 5 $m\ s^{-1}$ maximum limit for class E but falls within the criterion of class D, which includes all wind speeds. As a result the observational data with a ΔT value of 1.7°C/100m and a wind speed value of 7 $m\ s^{-1}$ are classified under stability class D, not class F.

The data are also punched on computer cards in a format compatible with the STAR PROGRAM of the National Climatic Center, NOAA, U.S. Department of Commerce. A detailed description of the punched output can be found in the Monthly Progress Reports.

AVERAGE MIXING LAYER HEIGHT

Colorado C-b Tract

Season: June, July, August

MIXING LAYER HEIGHT (Height in meters)	PERCENT OF OCCURRENCE					
	MORNING			AFTERNOON		
	0°	+5°	+10°	0°	+5°	+10°
surface	33.3			3.8		
1 - 250m	37.0			34.6		
251 - 500m		4.0		11.5		
501 - 750m	7.4			7.7		
751 - 1000m		12.0		7.7	3.8	
1001 - 1250m	11.1	4.0		3.8	7.7	
1251 - 1500m	7.4	8.0			11.5	
1501 - 1750m	3.7	8.0		15.4		3.8
1751 - 2000m		4.0	8.3	3.8	3.8	
> 2000m		52.0	41.7	3.8	50.0	11.5
None defined		8.0	50.0	7.7	23.1	84.6
TOTAL NUMBER	27	25	24	26	26	26

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1794

TE 06/01/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 0M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.11
100.	250.	-0.84
250.	500.	-0.89
500.	750.	-0.98
750.	1000.	-1.07
1000.	1500.	-0.90

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1846

TE 06/01/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.54
100.	250.	-0.65
250.	500.	-0.85
500.	750.	-0.96
750.	1000.	-0.87
1000.	1500.	-0.80

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 158

TE 06/03/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	183.	0.27	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 194

TE 06/03/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.13
100.	250.	-1.08
250.	500.	-0.94
500.	750.	-1.14
750.	1000.	-1.00
1000.	1500.	-0.97

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1926

TE 06/05/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.71
100.	250.	-0.93
250.	500.	-0.96
500.	750.	-0.66
750.	1000.	-0.90
1000.	1500.	-1.08

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1016

DATE 06/07/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	46.	0.0	0.0

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1006

DATE 06/07/76 TIME 12:30MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
187.	233.	0.0	-1.07

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1024

DATE 06/09/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
370.	416.	0.0	-0.95

COL CB TRACT ELEV 2042 METERS SOUNDING ID 528

DATE 06/09/76 TIME 12:30MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
535.	581.	0.0	-1.21

COL CB TRACT ELEV 2042 METERS SOUNDING ID 170

DATE 06/11/76 TIME 06:15MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1162.	1207.	0.0	-1.03

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 06/11/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
183.	320.	0.0	-0.55

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 06/13/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.39
100.	250.	-1.07
250.	500.	-0.83
500.	750.	-0.71
750.	1000.	-0.76
1000.	1500.	-0.79

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 06/13/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1358.	1449.	0.0	-1.10

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 127

DATE 06/15/76 TIME 06:15MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1234.	1463.	0.22	-0.72

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 439

DATE 06/15/76 TIME 12:30MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
290.	335.	0.0	-1.00

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1173

DATE 06/17/76 TIME 06:15MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	46.	0.0	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2747

DATE 06/17/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
91.	137.	0.0	-1.09

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2741

DATE 06/19/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
171.	246.	0.0	-1.87

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2743

DATE 06/19/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-2.74
100.	250.	-0.76
250.	500.	-0.82
500.	750.	-1.08
750.	1000.	-1.01
1000.	1500.	-0.77

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2745

DATE 06/23/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
947.	993.	0.0	-0.90

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2740

DATE 06/23/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-2.72
100.	250.	-1.34
250.	500.	-0.74
500.	750.	-0.94
750.	1000.	-0.98
1000.	1500.	-1.05

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2746

DATE 06/25/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1050.	1095.	0.0	-1.02

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2744

DATE 06/25/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.79
100.	250.	-0.94
250.	500.	-1.07
500.	750.	-1.03
750.	1000.	-0.86
1000.	1500.	-1.01

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2742

DATE 06/27/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE INSUFFICIENT DATA WITHIN 2000M OF THE SFC

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2736

DATE 06/27/76 TIME 12:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1436.	1482.	0.0	-0.94

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2739

DATE 07/01/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-2.88
100.	250.	-0.76
250.	500.	-1.07
500.	750.	-0.89
750.	1000.	-1.08
1000.	1500.	-0.83

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2738

DATE 07/03/76 TIME 06:00MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.88
100.	250.	-0.81
250.	500.	-0.79
500.	750.	-0.91
750.	1000.	-0.73
1000.	1500.	-0.88

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2735

DATE 07/03/76 TIME 12:30MST ASCENT RATE 600 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.59
100.	250.	-1.00
250.	500.	-1.09
500.	750.	-0.75
750.	1000.	-0.96
1000.	1500.	-0.87

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2734

DATE 07/09/76 TIME 06:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	114.	0.0	-0.79

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2735

DATE 07/09/76 TIME 11:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
495.	535.	0.0	-0.75

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2732

DATE 07/11/76 TIME 06:45MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
76.	114.	0.0	-0.39

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2724

DATE 07/11/76 TIME 11:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.32
100.	250.	-0.46
250.	500.	-0.88
500.	750.	-1.04
750.	1000.	-1.04
1000.	1500.	-0.89

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2726

DATE 07/13/76 TIME 07:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
316.	392.	0.0	-0.85

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2736

DATE 07/13/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.35
100.	250.	-0.92
250.	500.	-1.06
500.	750.	-1.07
750.	1000.	-0.87
1000.	1500.	-0.82

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2730

DATE 07/15/76 TIME 06:45MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	572.	0.02	-0.24

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2728

DATE 07/15/76 TIME 11:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
191.	229.	0.24	-0.75

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2799

DATE 07/17/76 TIME 06:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE INSUFFICIENT DATA WITHIN 2000M OF THE SFC

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2727

DATE 07/17/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.44
100.	250.	-0.86
250.	500.	-1.09
500.	750.	-1.01
750.	1000.	-1.01
1000.	1500.	-0.91

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1424

DATE 07/19/76 TIME 06:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
152.	229.	0.35	-0.41

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2309

DATE 07/19/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
365.	408.	0.0	-1.12

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2063

DATE 07/21/76 TIME 06:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
0.	76.	0.12	0.0

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2312

DATE 07/21/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-1.82
100.	250.	-0.80
250.	500.	-1.02
500.	750.	-0.93
750.	1000.	-0.99
1000.	1500.	-0.97

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1746

DATE 07/23/76 TIME 06:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	76.	0.0	-0.24

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2216

DATE 07/23/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE NO INVERSION BASES WITHIN 1500M OF THE SFC

LAYER BASE METERS AGL	LAYER TOP METERS AGL	DT/DZ (DEG C)/100M
0.	100.	-0.67
100.	250.	-0.45
250.	500.	-0.85
500.	750.	-0.76
750.	1000.	-0.73
1000.	1500.	-0.73

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2310

DATE 07/25/76 TIME 06:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
1177.	1215.	1.44	-0.95

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 2317

DATE 07/25/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

THERE ARE INSUFFICIENT DATA WITHIN 2000M OF THE SFC

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 08/16/76 TIME 06:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
651.	689.	0.0	-0.88

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 08/16/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
565.	603.	0.0	-0.93

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1363

DATE 08/24/76 TIME 06:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
457.	495.	0.26	-0.65

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 08/24/76 TIME 12:00MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
114.	152.	0.0	-0.61

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 1423

DATE 08/26/76 TIME 06:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
38.	76.	0.0	-0.50

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 13

DATE 08/26/76 TIME 12:15MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
570.	646.	0.0	-0.97

****

COL CB TRACT ELEV 2042 METERS SOUNDING ID 0

DATE 08/30/76 TIME 06:30MST ASCENT RATE 500 FPM DATA INTERVAL 15 SEC.

INV BASE METERS AGL	INV TOP METERS AGL	INV DT/DZ (DEG C)/100M	DT/DZ BELOW INV (DEG C)/100M
419.	457.	0.0	-0.60

MONTH: SEASON JJA YEAR: 1976. COL CR TRACT ELEV 2042 METERS

HOLZWORTH'S CLASSIFICATION SCHEME FOR INVERSIONS
MODIFIED TO SHOW TOTAL NUMBER INSTEAD OF PERCENT

THICKNESS (METERS)	INVERSION BASE HEIGHT (M) SFC	1-100	101-250	251-500	501-750	751-1000	1000-1500	1501-2000	2001-2500	2501-3000	TOTAL
1 - 100	3	5	5	7	4	1	5	0	0	0	30
101 - 250	1	0	1	0	0	0	1	0	0	0	3
251 - 500	0	0	0	0	0	0	0	0	0	0	0
501 - 750	0	1	0	0	0	0	0	0	0	0	1
751 - 1000	0	0	0	0	0	0	0	0	0	0	0
1001 - 1500	0	0	0	0	0	0	0	0	0	0	0
> 1500	0	0	0	0	0	0	0	0	0	0	0
INV TOTAL	4	6	6	7	4	1	6	0	0	0	34
DT/DZ 5		3	0	0	0	0	0	0	0	0	3
FROM INV 4		2	4	3	0	0	1	0	0	0	10
BASE 3		1	1	4	3	1	5	0	0	0	15
TO 2		0	0	0	1	0	0	0	0	0	1
SFC 1		0	1	0	0	0	0	0	0	0	1
NO INV TOT		16	16	16	16	16	16				
DT/DZ FOR 5		1	0	0	0	0	0				
SAME 4		4	6	2	4	3	4				
LAYERS 3		3	9	14	12	13	12				
AS INV 2		4	1	0	0	0	0				
BASE 1		4	0	0	0	0	0				

DT/DZ (DEG C)/100M
5= 0.00 TO -0.40
4=-0.41 TO -0.80
3=-0.81 TO -1.20
2=-1.21 TO -1.60
1=<-1.60

MONTH: SEASON JJA YEAR: 1976. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE A STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 1 SOUNDINGS FROM A SAMPLE OF 53 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: SEASON JJA YEAR: 1976. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE B STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 1 SOUNDINGS FROM A SAMPLE OF 53 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: SEASON JJA YEAR: 1976. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE C STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 1 SOUNDINGS FROM A SAMPLE OF 53 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: SEASON JJA YEAR: 1976. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.04	0.0	0.02	0.0	0.0	0.0	3.6	0.06
NE	0.02	0.0	0.0	0.0	0.0	0.0	1.4	0.02
ENE	0.04	0.0	0.0	0.0	0.0	0.0	1.1	0.04
E	0.02	0.0	0.0	0.0	0.0	0.0	2.0	0.02
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.02	0.0	0.0	0.0	0.0	0.0	1.8	0.02
SSE	0.04	0.06	0.04	0.02	0.0	0.0	5.3	0.16
S	0.0	0.04	0.0	0.02	0.0	0.0	7.7	0.06
SSW	0.08	0.06	0.10	0.02	0.0	0.0	5.9	0.27
SW	0.04	0.02	0.0	0.0	0.0	0.0	2.3	0.06
WSW	0.04	0.02	0.0	0.0	0.0	0.0	2.0	0.06
W	0.02	0.0	0.0	0.0	0.0	0.0	0.9	0.02
WNW	0.04	0.04	0.0	0.0	0.0	0.0	2.6	0.08
NW	0.02	0.02	0.0	0.0	0.0	0.0	3.0	0.04
NNW	0.08	0.0	0.0	0.0	0.0	0.0	1.9	0.08
AVG SPEED	1.7	4.4	7.7	12.2	0.0	0.0		0.0
TOTAL	0.51	0.27	0.16	0.06	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE D STABILITY CLASS IS 0.94

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 1 SOUNDINGS FROM A SAMPLE OF 53 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: SEASON JJA YEAR: 1976. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.33	0.0	0.0	0.0	0.0	0.0	1.3	0.33
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.33	0.0	0.0	0.0	0.0	3.3	0.33
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.33	0.0	0.0	0.0	0.0	0.0	1.8	0.33
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	1.6	3.3	0.0	0.0	0.0	0.0		0.0
TOTAL	0.67	0.33	0.0	0.0	0.0	0.0		1.00

RELATIVE FREQUENCY OF OCCURRENCE OF THE E STABILITY CLASS IS 0.06

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 1 SOUNDINGS FROM A SAMPLE OF 53 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: SEASON JJA YEAR: 1976. COL CB TRACT SFC TO 500 METERS

NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ENE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WSW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
W	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
WNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNW	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
AVG SPEED	0.0	0.0	0.0	0.0	0.0	0.0		0.0
TOTAL	0.0	0.0	0.0	0.0	0.0	0.0		0.0

RELATIVE FREQUENCY OF OCCURRENCE OF THE F STABILITY CLASS IS 0.0

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 1 SOUNDINGS FROM A SAMPLE OF 53 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA

MONTH: SEASON JJA YEAR: 1976. COL CB TRACT SFC TO 500 METERS

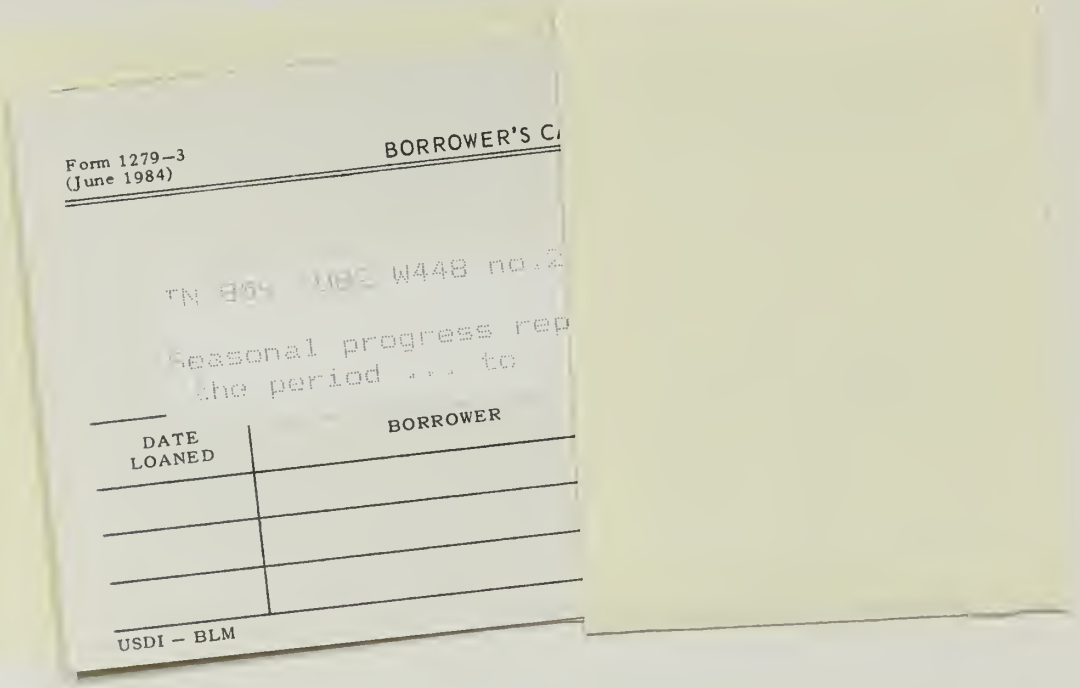
NORMALIZED FREQUENCY DISTRIBUTION

DIRECTION	SPEED (METER/SEC) 0-3	4-6	7-10	11-16	17-21	GREATER THAN 21	AVERAGE SPEED	TOTAL
N	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
NNE	0.04	0.0	0.02	0.0	0.0	0.0	3.6	0.06
NE	0.02	0.0	0.0	0.0	0.0	0.0	1.4	0.02
ENE	0.04	0.0	0.0	0.0	0.0	0.0	1.1	0.04
E	0.02	0.0	0.0	0.0	0.0	0.0	2.0	0.02
ESE	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
SE	0.02	0.0	0.0	0.0	0.0	0.0	1.8	0.02
SSE	0.06	0.06	0.04	0.02	0.0	0.0	4.8	0.17
S	0.0	0.04	0.0	0.02	0.0	0.0	7.7	0.06
SSW	0.08	0.06	0.10	0.02	0.0	0.0	5.9	0.25
SW	0.04	0.02	0.0	0.0	0.0	0.0	2.3	0.06
WSW	0.04	0.04	0.0	0.0	0.0	0.0	2.3	0.08
W	0.02	0.0	0.0	0.0	0.0	0.0	0.9	0.02
WNW	0.06	0.04	0.0	0.0	0.0	0.0	2.5	0.10
NW	0.02	0.02	0.0	0.0	0.0	0.0	3.0	0.04
NNW	0.08	0.0	0.0	0.0	0.0	0.0	1.9	0.08
AVG SPEED	1.7	4.3	7.7	12.2	0.0	0.0		0.0
TOTAL	0.52	0.27	0.15	0.06	0.0	0.0		1.00

NORMALIZED FREQUENCY DISTRIBUTION INDEPENDENT OF STABILITY

RELATIVE FREQUENCY OF CALM 0.0

A TOTAL OF 1 SOUNDINGS FROM A SAMPLE OF 53 SOUNDINGS DID NOT HAVE 500 M OF TEMP AND WIND DATA



Form 1279–3
(June 1984)

BORROWER'S C

TN 89 .U6S W448 no.2

Seasonal progress rep
the period ... to

DATE LOANED	BORROWER

USDI – BLM